REMARKS

In the Final Rejection dated October 6, 2003, claims 18-20 were objected to due to under 37 C.F.R. §1.75(c) as being of improper dependent form. Applicants agree that those claims are no longer consistent with independent claim 16 from which they depend, in view of the previous amendments to claim 16. Claims 18-20 therefore have been cancelled.

Claims 15, 3-10 and 31 were rejected under 35 U.S.C. §103(a) as being unpatentable over Paltieli in view of Ferre et al.. Claims 32 and 33 were rejected under 35 U.S.C. §103(a) as being unpatentable over Paltieli in view of Ferre et al, further in view of Manwaring et al.. Claims 16-22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Simon et al in view of Cosman.

Applicants note with appreciation the interview courteously afforded the undersigned counsel for the Applicants on December 11, 2003, wherein the above rejections were discussed. The following summarizes the discussion at the interview.

In the Final Rejection, the Examiner acknowledges that the Paltieli reference does not disclose a mixing unit connected to the imaging unit for mixing a representation of the tip into the 2D image and, if the tip is not located in the image plane, for mixing a designation of the distance of the tip from the image plane into the 2D image, with the designation being alterable and indicating a magnitude of the distance. The Examiner relied on the Ferre et al as providing such a teaching. At the interview, the Examiner explained that in the Ferre et al system, if the tip of the instrument is located physically outside of the subject, and is moved toward the subject, the Ferre et al system will continually display "new" images as the tip of the

instrument moves closer to the subject, and since the tip is merely moving in free space outside of the subject, the only change from image-to-image would be the location of the tip of the instrument. The Examiner stated this would provide an indication of the distance of the tip from the image plane.

At the interview, the undersigned counsel acknowledged that this is a correct description of that situation in the Ferre et al reference, however, the existing language of independent claim 15 still would not be satisfied by this described manner of operation of Ferre et al, and therefore even if the Paltieli system were modified in accordance with the teachings of Ferre et al, a system as set forth in claim 15 still would not result.

This is because in the Ferre et al system it is intended that the plane that is displayed on the display screen *always* will be the image plane that contains the tip of the instrument. This is described in the Ferre et al reference at column 5, in the paragraph beginning at line 9. Moreover, this fact relating to the operation of the Ferre et al system is important for the intended operation thereof, since it conveys essential information to the physician viewing the display screen. The physician viewing the display screen knows that whatever image is displayed at the display screen at any given time will be the image plane that contains the tip of the instrument. This is the manner by which the location of the tip is conveyed to the physician by means of the information on the display screen. Thus, in the Ferre et al system, there is no need to provide any indication or other type of display that indicates the distance of the tip from the image plane, because the instrument tip is *always in the image plane* in the Ferre et al system.

It is true that, as described by the Examiner at the interview, when the instrument tip is physically located outside of the subject, the contents of the image representing the subject will not change from image-to-image as the tip is moved to approach the subject, and thus these successively updated images could be considered in the manner of frames of a movie wherein the tip is increasingly moving closer and closer to the subject, with the image of the subject itself remaining unchanged.

The explicit language of claim 15, however, states that a designation of the distance of the tip from the image plane is mixed into the displayed image, i*f the tip is not located in the image plane.* Thus, if the instrument tip is located in the image plane, as is always the case in the Ferre et al system by virtue of the intended operation thereof, no indication of the distance of the tip from the image plane is displayed in accordance with the language of claim 1 (because in that situation there is no need to do so). If the tip of the instrument is located outside of the image plane, then there is a need to mix a designation of the distance of the tip from the image plane into the displayed image, and this is then done according to the explicit language of claim 15.

Since the intended operation of the Ferre et al system is that the image that is displayed will always be that of the image plane in which the instrument tip is currently located, the situation never arises in the Ferre et al reference of the instrument tip *not* being in the displayed image in the Ferre et al system. Therefore, the concept of taking action of any type in the Ferre et al system if the tip is not located in the displayed image plane is inconsistent with the explicit teachings of

Ferre et al, because such a situation is never intended to occur in the context of the Ferre et al system.

The Examiner at the interview agreed with this position of the Applicants, and stated that the rejection of claims 15, 3-10 and 31 based on Paltieli and Ferre et al would be withdrawn. The Examiner stated, however, that she has located additional references, namely United States Patent No. 6,529,766 and United States Patent No. 6,064,984, which the Examiner believes substantiate a new rejection of at least independent claim 15. The Examiner at the interview therefore stated that upon the filing of a written response, the current rejection of claim 15 would be withdrawn, and prosecution would be reopened to permit the Examiner to make a new rejection based on one or both of the aforementioned recently-located patents.

As to independent claim 16, the undersigned counsel stated at the interview that the C-arm system shown in the drawings of the Simon et al reference could not be used to generate image information from which a 3D image could be produced. The C-arm shown in Figure 1 of the Simon et al reference unquestionably can produce only 2D image information. This is readily apparent because in order to produce image data from which a 3D image can be generated, it is necessary for the x-ray source and the radiation receiver to be rotated through 180° plus the angle of the fan beam, which is typically approximately 10°. Therefore, in order to produce image data from which a 3D image can be generated, it is necessary, in a C-arm system, that the C-arm be able to be pivoted through approximately 190°. This cannot be accomplished in the C-arm system shown in Figure 1 of Simon et al, because both the x-ray source and the radiation receiver protrude or project beyond the outer circumference of the C-arm. This outer circumference must pass through

the holder as the C-arm is pivoted through the holder. The outwardly projecting x-ray source and radiation receiver would collide with the holder in the C-arm shown in Figure 1 of Simon et al if it were attempted to pivot the C-arm through the holder by an amount exceeding approximately 70°.

By contrast, the C-arm system shown in Figure 4 of the present application has the x-ray receiver and the x-ray emitter disposed completely at the interior of the C-arm 48, and thus there is no impediment to the C-arm 48 moving completely through the holder 47 as the C-arm 48 rotates through 190°.

In response to this argument, the Examiner stated the language of claim 16 did not explicitly require that the C-arm x-ray image signal acquisition unit actually generate three-dimensional image data, but only that the image unit do so. The Examiner therefore stated that claim 16 did not preclude the possibility of the three-dimensional image data being supplied to the image unit from some source other than the C-arm system shown in Figure 1 of Simon et al, and as long as that three-dimensional information was in some manner combined with the image information (whatever it is) from the C-arm system shown in Figure 1 of Simon et al, this was sufficient to meet the claim language of claim 1. Access to 3D image data from sources other than the C-arm system explicitly shown in Figure 1 of the Simon et al reference is described at column 14, beginning at line 5. The Examiner stated at the interview that this passage in Simon et al provides teaching for responding to the first element of claim 16 of the present application.

Accordingly, as proposed at the interview, claim 16 has been amended to explicitly state that the C-arm x-ray image data acquisition unit acquires 3D image data, and that this is the 3D image data that are used by the image unit for producing

the 3D image of the subject. Applicants submit that by making it explicit in claim 16 that the C-arm x-ray image data acquisition unit acquires 3D image data, continued reliance on the Simon et al reference is not justifiable because, as noted above, it is impossible for the C-arm system disclosed therein to acquire 3D data. Moreover, reliance on 3D data supplied from some source other than the C-arm x-ray data acquisition system, as set forth in the aforementioned passage beginning at column 14, line 5 of Simon et al would not satisfy the remainder of the language of claim 16.

Therefore, Applicants respectfully submit that even if the Simon et al system were modified in accordance with the teachings from Cosman identified by the Examiner, a system as set forth in claim 16 still would not result. Claims 16-22, therefore, would not have been obvious to a person of ordinary skill in the art based on the teachings of Simon et al and Cosman.

For the above reasons, the claims are submitted to be in condition for allowance over the references that have been currently relied upon. As noted above, it was stated at the interview that prosecution would be reopened to set forth a new ground of rejection, and Applicants will respond thereto when a substantiation of this new ground of rejection is received in a next Office Action.

Submitted by,

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